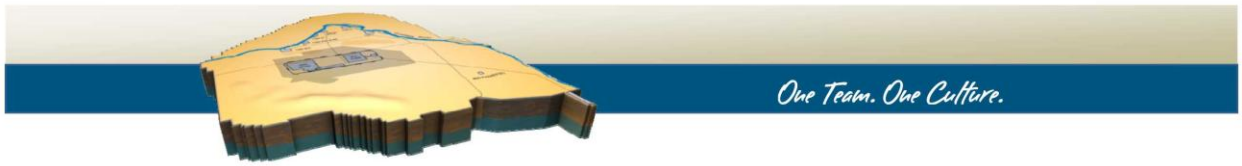

Administrative Procedure

PRC-PRO-SH-40143

Biological Hazards

Revision 0, Change 1

Published: 09/10/2009
Effective: 09/10/2009

Project: CH2M HILL Plateau Remediation Company
Topic: Occupational Safety & Industrial Hygiene

Technical Authority: M.J. Schmoldt
Functional Manager: T.L. Vaughn

Administrative Use

CH2MHILL
Plateau Remediation Company

CHANGE SUMMARY

AJHA: N/A
Periodic Review Due Date: 6/29/2014

HRB Date: N/A
Validation Date: N/A

Rev. 0, Chg. 1 **PR#:** PRC-09-0889

USQ Screen Number:
PFP: GCX-7
BOS: GCX-7
TP: Exempt
100K: GCX-8
WESF: GCX-8
SWOC: GCX-7
CSB/ISA: GCX-8

Description of Change

Rev. 0-1: Updated Figure 1 to include mice under wildlife and to assume all biological hazards are contaminated until surveyed.

Included mice under small animal interactions in table 1.

Edited 3.5.1 to point out 3 recommended disinfectants and allow equivalents as determined by an Industrial Hygienist and added a note to not mix bleach with other cleaners.

Rev. 0-0, 06/29/09: New procedure.

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1.0 INTRODUCTION

1.1 Purpose

The goal of this procedure is to prevent exposure and subsequent illness or disease to workers from biological hazards. This procedure provides instructions for identifying the primary type of biological hazards expected to be encountered by CH2M HILL Plateau Remediation Company (CHPRC) workers in performance of assigned work. Most, if not all, of these biological hazards are commonly present in our homes and community, but in the workplace they are recognized potential hazards which must be controlled, just as other workplace hazards, in order to prevent exposure, illness or injury.

Recognition of the type of biological hazards present leads to identification of appropriate general precautions to prevent worker illness or disease. When avoidance is impractical, use of appropriate general precautions and personal protective equipment, as specified by an industrial hygienist, and if needed a radiological control technician (RCT) are necessary to minimize the potential for worker exposure to biological hazards. Responses for presumed or known exposure are also described in this procedure.

1.2 Scope

This level 1 procedure addresses recognized biological hazards that CHPRC workers may encounter at Hanford during their course of work activities. This procedure implements Integrated Safety Management System/Environmental Management System (ISMS/EMS) requirements for environmental, safety and health.

This procedure does not address: food safety, drinking water, allergens, common communicable human diseases, blood drives, pandemic diseases, research laboratory etiologic (disease causing) agents or biological warfare agents. For activities outside those covered by this procedure, personnel must complete a job hazard analysis in cooperation with industrial hygiene.

1.3 Applicability

This procedure should be used by CHPRC personnel who are potentially exposed to biological hazards as identified in Table 1, *Biological Hazard Classification Table*.

Bloodborne pathogens exposure is a specifically regulated type of biological hazard that applies to workers which the employer identifies as subject to this standard based on the performance of their required and assigned job duties.

The bloodborne pathogen standard does not apply in the following situations due to interpretative letters from OSHA or the definitions in 29 CFR 1910.1030:

- Voluntary first aid and cardiopulmonary resuscitation (CPR) responders
- Voluntary emergency responses (where there may be a voluntary assignment but is not a job requirement)
- Handling of packaged Environmental Protection Agency (EPA) regulated biological hazard wastes
- Dealing with ordinary sharp objects that are not contaminated with blood borne pathogens (such as hypodermic needles).

The bloodborne pathogen standard does apply, to positions that include the following as required job responsibilities for the work assignment:

- Healthcare and clinic providers
- Emergency Services providers
- Firefighters
- Law enforcement personnel

Direction for Radiological Control Technicians is found in PRC-PRO-RP-40067, *Personnel and Personal Effects Decontamination*.

1.4 Implementation

This procedure is effective upon publication.

For Occupational Safety and Health Staff, Radiation Control Technicians, Nuclear Chemical Operators, and Janitorial staff, required reading and signoff will be required within 90 days of the publication of this procedure.

New employees will be trained prior to being assigned to work through required reading assigned by their supervisor. Refresher training is not required, but is recommended as appropriate seasonally to maintain awareness of biological hazards likely to be present.

2.0 RESPONSIBILITIES

The responsibilities identified in this section apply to the Biological Hazards Program as a whole. Responsibilities associated with individual tasks are identified in Section 3.0, *Process.*

2.1 Occupational Safety and Industrial Hygiene Manager

Provide direction to industrial hygiene and radiological control personnel and potentially exposed workers regarding administration of the CHPRC Biological Hazard program.

2.2 Industrial Hygiene and Radiological Control Personnel

Assist potentially affected workers and work planners determine a viable path forward when dealing with biological hazards outside the scope of this procedure.

2.3 Potentially Exposed Worker

Administer universal precautions when a potential biological condition is identified through the Stop, Think, Act, Review (STAR) process.

3.0 PROCESS

3.1 Biological Hazard Training

Actionee	*Step*	*Action*
Manager of Potentially Exposed Workers	1.	Identify appropriate biological hazard training on the potentially exposed worker's Integrated Training Electronic Matrix (ITEM) training plan using the Employee Job Task Analysis (EJTA). Biological hazard training may include the following: • Course # 170648, *Bloodborne Pathogens Initial* • Course # 170653, *Bloodborne Pathogens - CBT*

3.2 Recognition and Classification of Biological Hazards

Actionee	*Step*	*Action*
Potentially Exposed Worker	1.	Identify biological hazard using Figures 1 and 2.
	2.	Classify biological hazard using Table 1.

Figure 1 - Non-Regulated Biological Hazards

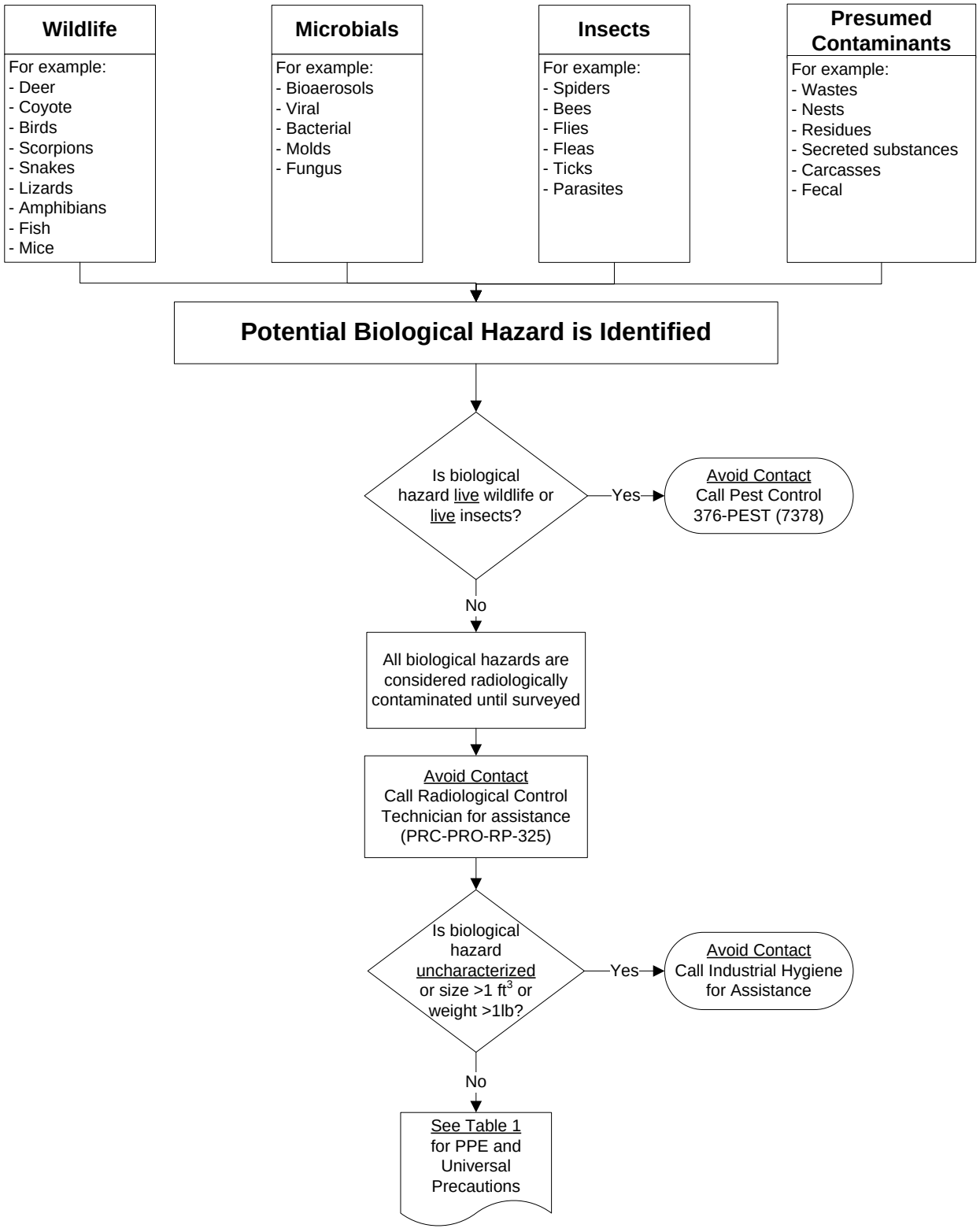

Figure 2 - Bloodborne Biological Hazards

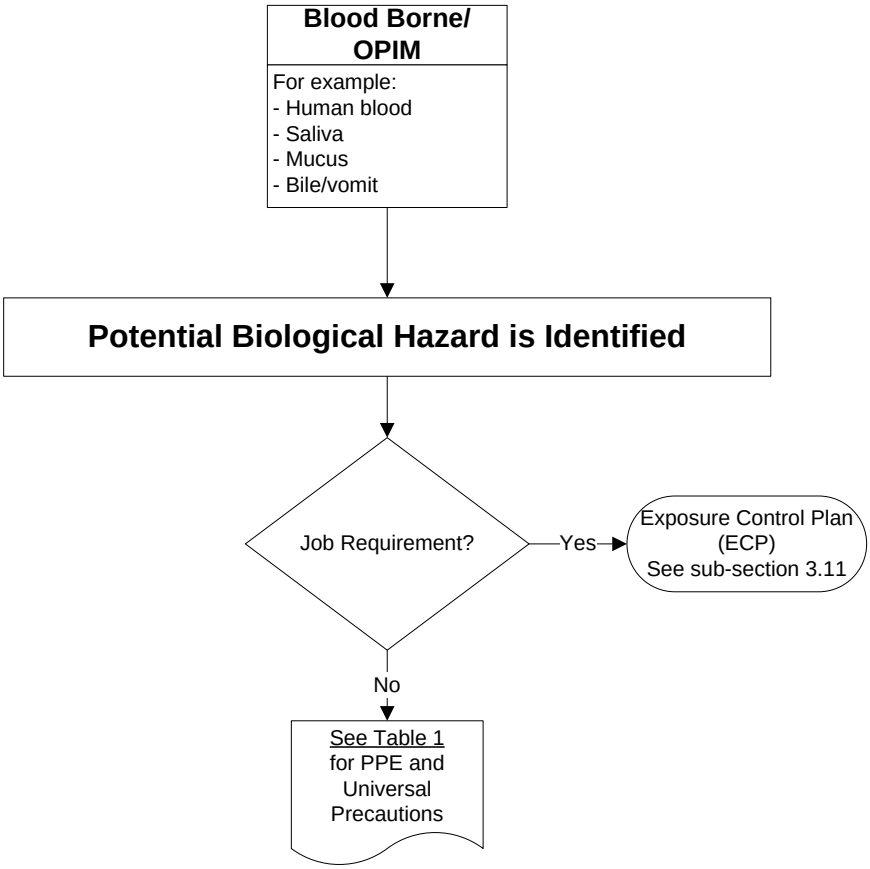

Table 1 - Biological Hazard Classification Table[1]

BIOLOGICAL HAZARD TYPE	***Potential Route of Exposure***	***Potential Hazards***	***Precautions***	***Universal Precaution and Basic Removal Requirements***
Large wild animal interactions	Skin, Injection	Bites, scratches, transfer of diseases from animal or parasites	Avoid contact with animals, their habitat or trails. Call Integrated Pest Management Services 376-PEST (7378)	Exercise caution in areas where animals may be present. Do not try to move animals.
Contaminants of biological origin: Animal or plant residuals (wastes, nests, carcasses,)	Skin, Inhalation, Injection	Skin Contact, Bites, Ingestion, Infection, Parasite transmitted diseases (also see Microbial Biological Hazards below)	- Avoid direct contact with skin & wash hands - Avoid creating airborne dusts, - Use universal precautions if handling is necessary, **PPE specified by IH**	1- 15 minute soak with disinfectant 2- Impervious gloves 3 - Safety Glasses 4 - Long sleeves, long pants 5 - Shoe covers as needed
Small animals interactions, mammals, birds, fish scorpions, snakes, mice, etc.	Skin, Injection	Stings, Bites, Venom, Pathogenic microbes, Allergic reaction, Parasite transmitted diseases	Avoid direct contact with skin & wash hands	Wear leather gloves. If there is any potential for contact with live animals call 376-PEST.
Insects, spiders fleas	Injection	Stings, Bites, Venom, Allergic Reaction, Parasite transmitted diseases	Avoid direct contact with skin & wash hands	See items 1-5 above. Additionally, see medical provider if bite begins to redden or becomes swollen
Microbial bioaerosols or surface contaminants (Viral, molds/fungus, bacterial, and parasites)	Skin, Injection, Inhalation, Ingestion, Eye exposure	Legionnaire's disease, Hantavirus, Histoplasmosis, Lyme's disease, West Nile Virus, Tetanus	- Avoid direct contact with skin, -Avoid creating airborne dusts, - Use universal precautions if handling is necessary, & wash hands **PPE specified by IH**	See items 1-5 above. Additionally, see medical provider if there is any adverse respiratory effects for up to 48 hours after exposure.
Bloodborne human diseases	Skin, Injection, Inhalation	HIV, Hepatitis	Call HFD emergency response & use Universal precautions & wash hands	See items 1-5 above. Hepatitis B vaccine can be requested from a medical provider
Biological Hazardous Regulated Wastes	Skin, Injection, Inhalation	Infectious materials, Toxins	Package in double wrapped plastic with Biological Hazard label & wash hands	See items 1-5 above. Transport as a regulated Hazardous Material
Other Presumed Infectious Materials (OPIM)	Injection, Inhalation, Eye exposure	Common infectious materials: Strep., Staph., E. Coli, Salmonella	Universal precautions & wash hands	See items 1-5 above.

[1]Recognized biological hazards likely to be encountered during CHPRC activities are summarized in this table. While this list is not comprehensive, it does include known types of biological hazards grouped by similar precautions for hazard control.

3.3 Hazard Assessment

Actionee	*Step*	*Action*
Industrial Hygienist (IH)	1.	Conduct a hazard analysis (PRC-PRO-WKM-079, *Job Hazard Analysis*) of any work activity where biological hazards may reasonably be assumed to create a significant exposure.
	2.	Describe the basis and any assumptions used for determining if significant exposure to biological hazards exists.
	3.	Include a radiological survey in accordance with PRC-PRO-RP-325, *Contaminated Wildlife or Vegetation*, to address any bioaccumulation and transfer of radioactive contaminants with biological materials.
	4.	Biological hazard potential for exposure should normally be considered as the primary hazard, but radiological contaminants must be recognized and managed as well.

3.4 Graded Precautions for Biological Hazards

Actionee	***Step***	***Action***
Worker	1.	Where biological hazards are identified, the following hierarchy of controls should be followed: a. Avoidance b. Engineering Controls c. Administrative Controls d. Personal protective equipment
	2.	Use Table 1 precautions when cleanup is minimal.
IH	3.	Specify universal precautions and PPE where avoidance or completely effective engineering controls are impractical
	4.	Apply a graded approach to determine precautions to be applied depending on the quantity of the biological hazard, its intrinsic hazard, and likelihood of exposure which could result in disease.

3.5 Handling of Dead Animals, Residues, and Wastes

Actionee	*Step*	*Action*
Worker	1.	Handle dead animals, residues, and wastes, including surveying, disturbing, removal or cleaning of biologically hazardous materials using the following guidelines: • Consider all biological materials as radiologically contaminated until surveyed and determined to be not contaminated. • Select a disinfectant, three recommended ones are listed below. Use these or an equivalent approved by an Industrial Hygienist. **NOTE:** *Do not mix bleaches and other types of cleaners*. o Quaternary ammonium salt solutions (disinfectants) – Lemon HG – MSDS #054060, EPA Registration #1839-95-54412 – NABC Disinfectant – MSDS #023408, EPA Registration #5741-18 o Chlorine Bleach Solution (1.5 cups bleach to one-gallon water). • Contact Integrated Pest Management Services 376-PEST (7378) for disposal of non-radiologically contaminated carcasses larger than 1 lb. (e.g. larger than mice and small birds) or if for any reason you are uncertain of the best disposal method for the particular situation. • For smaller animal carcasses like mice, snakes and scorpions, use universal precautions, double bag and dispose of in the proper waste stream.

3.6 Handling of Non-Regulated Biological Waste

Actionee	*Step*	*Action*
Worker	1.	Handle non-regulated biological waste using the following guidelines: • Towels and disposable PPE used during cleanup of blood and OPIM must be disposed using universal precautions described below. o Biological waste must be double-bagged and marked prior to handling, storing, and transporting. o Dispose of biological waste bags/containers appropriately per instructions from the waste management specialist. o Radiological area waste containing biological waste must have final disposition in yellow radioactive waste bags and be placed and disposed with radioactive waste. Radiological area waste (radioactive waste) labels can be obtained from an RCT.

3.7 Responding to Insects, Spiders, or Small Pests

Actionee	*Step*	*Action*
Worker	1.	If live insects or spiders are encountered, complete one of the following activities: • Request Integrated Pest Management Services mitigation of animals or application of pesticides OR • Request a work package be developed for mitigation of the hazard.

WARNING

Do not disturb or handle animal carcasses greater than 1 lb in weight. Animal carcasses are generally contaminated with viruses, bacteria, fleas and parasites that may be readily transferred to nearby workers.

	2.	If responding to an animal carcasses greater than 1 lb in weight, call Integrated Pest Management Services at 376-PEST (7378).

3.8 Universal Precautions for Cleanup of Potential Biological Hazards

Actionee	*Step*	*Action*
Worker	1.	Spray biologically contaminated material with bleach/water solution
	2.	Ensure material is completely dampened before proceeding.
	3.	Wait at least 15 minutes before returning to remove material.
	4.	If area to be decontaminated is in a radiological area, then request a RCT to perform radiological survey of the biologically contaminated location(s), as required.
	5.	Scrape up (gently) deposit(s), as necessary, using appropriate hand tools (e.g., dust pan, tongs, or putty knife) to minimize contact and dust generation.
	6.	Place accumulated waste in plastic bag(s), as appropriate.
	7.	Post decontamination Activities – Occupied Areas Only
	8.	Perform the following post clean-up step(s) applicable to the area(s) after biological hazards have been removed.
	9.	After deposits have been removed, disinfect countertops, cabinets, drawers, and other surfaces by washing with a solution of detergent, water, and 10% household bleach, then mop area with a compatible cleaning solution containing 10% chlorine bleach.

3.9 Regulated Biological Hazardous Waste

Actionee	*Step*	*Action*
Worker	1.	Double bag and label biological hazardous human blood or OPIM before handling, storing and transporting.
	2.	If radiological, manage biological hazardous materials as radiological waste for handling and disposal.
	3.	If non-radiological, contact project specific waste coordinator for handling and disposal instructions.

3.10 General Precautions for Biological Hazards and Animal Waste

Actionee	*Step*	*Action*
Worker	1.	Treat all biological hazards as containing infectious disease.
	2.	Avoid creating dust or aerosolizing particles.
	3.	When cleaning areas with biologically hazardous materials or wastes, exercise the following precautions: • Wear rubber gloves. • Thoroughly wet affected area with approved disinfecting solution or spray (see sub-section 3.5). • Place waste in a sealed bag or container. • Place waste in garbage dumpster for transportation to landfill.

3.11 Bloodborne Pathogens

Actionee	*Step*	*Action*
Manager	1.	Identify workers that may fall under the Bloodborne Pathogen per 29 CFR 1910.1030.
	2.	Verify with IH and the Occupational Safety and Industrial Hygiene Manager that the worker falls under the Bloodborne Pathogen program.
	3.	If verified, implement an Exposure Control Plan (ECP) and Bloodborne Pathogen program for affected workers' job tasks. For those workers such as emergency service, firefighters, and medical providers where the Bloodborne Pathogen Standard routinely applies, an ECP must be utilized for those that are covered by the standard. The ECP must include the following per 29 CFR 1910.1030: • Exposure Assessment • Implementation methods • Procedure for evaluation of exposure incidents • Medical Sharps Incident Log • Training

Actionee	*Step*	*Action*
	4.	Offer the Hepatitis B vaccine to workers subject to the Bloodborne Pathogen ECP.
	NOTE:	*CHPRC has determined that workers who are not required, but who request this vaccination voluntarily as a precaution will be provided with it through the on-site medical provider*

3.12 Incidental Contact with Human Body Fluids

Actionee	*Step*	*Action*
Worker	1.	If significant exposure to aerosols is likely to occur, consider respiratory protection consisting of at least an N-95 respirator.
	2.	If performing sampling activities such as taking blood smears, nasal swipes, mucous membranes or other body fluids, wear protective impervious gloves and collect using tools, wipes or swabs.
	3.	When broken skin comes in contact with a presumed biological hazard, or when ingestion or inhalation of aerosols occurs, immediately report the contact to their supervisor and be taken to the a Occupational Medical Service Provider for further evaluation.

4.0 FORMS

Event Report, A-6004-756

5.0 RECORD IDENTIFICATION

In the event that an individual becomes injured, or comes in direct contact with a biological hazard that produces symptoms or infection, immediate notification to the worker's supervisor. An Event Report (Site Form A-6004-756) is to be filled out and submitted.

All records are generated, processed, and maintained in accordance with PRC-PRO-IRM-10588, *Records Management Processes*, and PRC-PRO-QA-19579, *OCRWM Reports Management.*

Records Capture Table

Name of Record	Submittal Responsibility	Retention Responsibility	OCRWM Retention Schedule (If OCRWM Related)
Event Report Form	Supervisor	CAIRS Database	N/A

6.0 SOURCES

6.1 Requirements

40 CFR 60.51c, “Standards of Performance for New Stationary Sources; Definitions”
49 CFR 173.134, “Class 6, Division 6.2—Definitions and exceptions”
10 CFR 851.21(a)(1), “Hazard identification and assessment for exposure to chemical, physical, biological or safety workplace hazards”
29 CFR 1910.10.30, “Bloodborne pathogens”

6.2 References

PRC-PRO-IRM-10588, *Records Management Processes*
PRC-PRO-QA-19579, *OCRWM Reports Management*
PRC-PRO-RP-325, *Contaminated Wildlife or Vegetation*
PRC-PRO-RP-40067, *Personnel and Personal Effects Decontamination*
PRC-PRO-WKM-079, *Job Hazard Analysis*

7.0 APPENDIXES

Appendix A - Glossary

Appendix A - Glossary

Term	Definition
Bloodborne Pathogen	Pathogenic (disease causing) microorganisms that are potentially present in human blood and include hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
Other Potentially Infectious Materials (OPIM)	Any body fluids visibly or potentially contaminated with blood and/or any human body fluids, tissues, or organs.
Infestation	• **Small scale infestation**: Less than 1ft³ of potentially Biological Hazardous material, not to exceed 1 lb of waste generated. Removal and cleaning can effectively be performed utilizing universal precautions per Table 1. • **Large scale infestation**: Greater than 1ft³ of potentially Biological Hazardous material, which exceeds 1 lb of waste generated. Removal and cleaning can effectively be performed under the direction of an Industrial Hygienist.
Regulated	Biological Hazardous Waste: Commonly called Biohazardous Waste, is defined in the bloodborne pathogen standard and is specific to human blood or other potentially infectious materials (OPIM) such as mucus, saliva, and vomit. This is waste that is regulated specifically by EPA (40 CFR part 60.51c) and DOT (49 CFR Part 173.134), and is generally associated with emergency and medical providers.
Non-regulated (exempt)	Potentially Hazardous Biological Waste: This is all biological solid waste generated from once living organisms that may contain potentially hazardous biological waste vectors (see Table 1) including blood, but is not covered by the 29 CFR 1910.1030 final rule. These biological hazardous wastes are common both in and out of the workplace.